

1 WHAT IS CLAIMED IS:

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3 1. A process for oligomerizing the olefins present in a Fischer-Tropsch
4 derived condensate containing a mixture of olefins and oxygenates
5 which comprises:

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7 (a) reducing significantly the oxygenates present in the
8 Fischer-Tropsch condensate;

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10 (b) contacting the Fischer-Tropsch derived condensate having
11 significantly reduced oxygenates with an ionic liquid catalyst in
12 an oligomerization zone under oligomerization reaction
13 conditions; and

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15 (c) recovering from the oligomerization zone a Fischer-Tropsch
16 derived product having molecules characterized by a higher
17 average molecular weight and increased branching as
18 compared to the Fischer-Tropsch derived condensate.

19

20 2. The process of claim 1 wherein substantially all of the oxygenates
21 present in the Fischer-Tropsch derived condensate are removed.

22

23 3. The process of claim 1 wherein the Fischer-Tropsch derived
24 condensate contains not more than about 200 ppmw elemental
25 oxygen.

26

27 4. The process of claim 3 wherein the Fischer-Tropsch derived
28 condensate contains not more than about 100 ppmw elemental
29 oxygen.

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31 5. The process of claim 1 wherein the oxygenates are removed by
32 contacting the Fischer-Tropsch derived condensate with an adsorbent
33 which is effective for removing the oxygenates.

1 6. The process of claim 5 wherein the adsorbent is a molecular sieve
2 having low silica to alumina ratio.

3

4 7. The process of claim 6 wherein the molecular sieve is a large pore
5 zeolite.

6

7 8. The process of claim 6 wherein the molecular sieve has an FAU type
8 framework.

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10 9. The process of claim 7 wherein the molecular sieve is an X zeolite.

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12 10. The process of claim 7 wherein the molecular sieve is a 13X molecular
13 sieve.

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15 11. A process for preparing a Fischer-Tropsch derived product by the
16 oligomerization of the olefins in a Fischer-Tropsch derived concentrate
17 which contains olefins and oxygenates which comprises:

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19 (a) dehydrating the Fischer-Tropsch derived concentrate in a
20 dehydration zone under dehydration conditions and recovering a
21 dehydrated Fischer-Tropsch derived condensate from the
22 dehydration zone;

23

24 (b) contacting the dehydrated Fischer-Tropsch derived condensate
25 with a molecular sieve capable of adsorbing the oxygenates
26 remaining in the dehydrated Fischer-Tropsch derived
27 condensate and recovering a Fischer-Tropsch derived
28 condensate intermediate containing significantly reduced
29 oxygenates;

30

31 (c) contacting the Fischer-Tropsch derived condensate intermediate
32 in an oligomerization zone with an effective oligomerizing
33 amount of a Lewis acid ionic liquid oligomerization catalyst while

maintaining said Fischer-Tropsch derived condensate intermediate and said oligomerization catalyst under preselected oligomerization conditions for a sufficient time to oligomerize the olefins present; and

3

6 (d) recovering from the oligomerization zone a Fischer-Tropsch
7 derived product having molecules characterized by a higher
8 average molecular weight and increased branching as
9 compared to the Fischer-Tropsch derived condensate.

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11 12. The process of claim 11 wherein substantially all of the oxygenates
12 present in the dehydrated Fischer-Tropsch derived condensate are
13 removed.

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15 13. The process of claim 11 wherein the dehydrated Fischer-Tropsch
16 derived condensate contains not more than about 200 ppmw elemental
17 oxygen.

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19 14. The process of claim 13 wherein the dehydrated Fischer-Tropsch
20 derived condensate contains not more than about 100 ppmw elemental
21 oxygen.

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23 15. The process of claim 11 wherein the adsorbent of step (b) is a
24 molecular sieve having low silica to alumina ratio.

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26 16. The process of claim 15 wherein the molecular sieve of step (b) has an
27 FAU type framework.

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29 17. The process of claim 16 wherein the molecular sieve is an X zeolite.

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31 18. The process of claim 16 wherein the molecular sieve of step (b) is a
32 13X molecular sieve.

1 19. The process of claim 11 wherein the Lewis acid ionic oligomerization
2 catalyst comprises a first component and a second component, said
3 first component comprising a compound selected from the group
4 consisting of aluminum halide, alkyl aluminum halide, gallium halide,
5 and ~~alkyl~~ gallium halide, and said second component is quaternary
6 ammonium or quaternary phosphonium salt.

7

8 20. The process of claim 19 wherein said first component is aluminum
9 halide ~~or~~ alkyl aluminum halide.

10

11 21. The process of claim 20 wherein said first component is aluminum
12 trichloride.

13

14 22. The process of claim 19 wherein said second component is selected
15 from one or more of hydrocarbyl substituted ammonium halide,
16 hydrocarbyl substituted imidazolium halide, hydrocarbyl substituted
17 pyridinium halide, alkylene substituted pyridinium dihalide, or
18 hydrocarbyl substituted phosphonium halide.

19

20 23. The process of claim 22 wherein the second component is an alkyl
21 substituted quaternary ammonium halide containing one or more alkyl
22 moieties having from 1 to about 9 carbon atoms.

23

24 24. The process of claim 23 wherein the second component comprises at
25 least ~~1~~-methylamine hydrochloride.

26

27 25. The process of claim 22 wherein the second component is an alkyl
28 substituted imidazolium halide.

29

30 26. The process of claim 25 wherein the second component comprises at
31 least ~~1~~-ethyl-3-methyl-imidazolium chloride.

1 27. The process of claim 22 wherein the ratio of first component to the
2 second component of the oligomerization catalyst is within the range of
3 from about 1:1 to about 5:1.

4

5 28. The process of claim 19 wherein the ratio of the first component to the
6 second component is within the range of from about 1:1 to about 2:1.

7

8 29. The process of claim 1 including the additional step of hydrogenating
9 the unsaturated double bonds present in the Fischer-Tropsch derived
10 product.

11

12 30. The process of claim 29 wherein the Fischer-Tropsch derived product
13 includes lubricating base oil.

14

15 31. The process of claim 29 wherein the Fischer-Tropsch derived product
16 includes a diesel product.